

Consumer Acceptance, Purchase Intent, and Preference for Catfish Fillets After Extended Storage of Whole Wild-Caught Catfish

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INTRODUCTION

U.S. Department of Agriculture, Food Safety Inspection Service (USDA-FSIS) regulations on catfish processors have imposed restrictions on operational days and hours, leading to reduced processing volumes for wild-caught catfish and a decline in the number of active fishermen. While processing facilities are limited in their hours of operation, they are permitted to receive and ice whole fish outside the hours of USDA-FSIS inspection. In an earlier study, microbial and physicochemical analyses demonstrated that whole catfish remain safe and of acceptable quality for up to five days when stored in ice under refrigeration.

OBJECTIVE

This study was aimed to evaluate consumer acceptance, purchase intent, and preference for catfish fillets derived from whole wild-caught catfish stored in ice for an extended period (four days).

MATERIALS AND METHODS

- A total of 161 consumers evaluated two types of catfish preparations: steamed and fried (Figure 1). Each preparation included two samples—one from fish filleted on the day of capture (fresh) and one from fish stored in ice for four days before filleting (extended storage).
- Consumers assessed color (pre-tasting), aroma, texture, fish flavor, overall flavor, and overall liking using a 9-point hedonic scale.



Figure 1. Steamed and fried catfish samples comparisons between fish filleted fresh on the day of capture (fresh) and those stored in ice for four days before filleting (extended storage).

- Purchase intent was recorded using a Yes/No scale based on sensory quality.
- Participants were also asked about their preference between fresh/refrigerated and frozen catfish fillets when purchasing fish for cooking at home.
- Pictures of raw catfish fillets in two different packages were presented to consumers separately (Figure 2).
- Consumers described their emotional responses using the “check-all-that-apply” (CATA) method with 38 emotion terms and then selected their preferred packages.



Figure 2. Catfish in zip top nylon bag (package A) and catfish in pre-labeled vacuum-packed bag (package B).

RESULTS

Each consumer tasted and rated two steamed catfish samples and two fried catfish samples. The age distribution included 79 consumers (aged 18-25), followed by 36 (aged 26-35), 19 (aged 36-45), 10 (aged 46-55) and 17 (over 55). Regarding ethnicity, over half (92) were Caucasian, followed by Asian (23), African American (19), Hispanic (19) and multiple races (8).

For catfish consumption habits: 55 consumers ate catfish once every three months, 50 ate catfish once per month, 22 consumed catfish once every six months, 21 had not eaten any catfish in the past six months, 10 ate catfish once a week, and 3 consumed catfish more than once a week.

Fresh steamed samples received a significantly higher overall liking score (6.09 ± 1.94) compared to extended storage samples (5.69 ± 1.94).

No significant difference was observed between fried samples (Table 1).

For purchase intent, 54% of consumers indicated willingness to purchase the fresh steamed sample, while 85% responded positively to the extended storage fried sample (Table 2).

Table 1. Liking scores for steamed & fried catfish based on a 9-point-hedonic scale*

	Steamed Catfish		Fried Catfish	
	Fresh	Extended Storage	Fresh	Extended Storage
Color	5.38±1.72	5.17±1.77	7.35±1.10 ^b	7.14±1.26 ^a
Aroma	5.41±1.70	5.31±1.83	7.12±1.18	7.11±1.32
Texture	6.39±1.77	6.09±1.87	7.42±1.20	7.40±1.22
Fish flavor	6.15±1.91 ^b	5.68±1.99 ^a	7.30±1.26 ^b	7.03±1.49 ^a
Overall Flavor	6.08±1.85 ^b	5.71±1.96 ^a	7.16±1.43	7.35±1.23
Overall Liking	6.09±1.94 ^b	5.69±1.94 ^a	7.24±1.38	7.41±1.23
Crispiness			7.75±1.13 ^b	7.50±1.33 ^a

* N=161 Mean ± SDs. Different letters between fresh and extended storage sample indicate a statistical significance ($P < 0.05$) based on a paired t-test. A 9-point hedonic scale (1=Dislike Extremely, 5=Neither Like nor Dislike, 9=Like Extremely).

Table 1. Consumer’s Purchase intent of catfish*

	Steamed Catfish [#]		Fried Catfish	
	Fresh	Extended Storage	Fresh	Extended Storage
Yes	83(52%)	73(45%)	25(15%)	33(20%)
No	78(48%)	88(54%)	136(85%)	128(80%)

*N=161. The # indicate a statistically significant ($P < 0.05$) between fresh and extended storage catfish samples based on a χ^2 test.

Overall, 70% of consumers preferred fresh/refrigerated fillets, while 30% preferred frozen fillet when purchasing fish for cooking at home. Compared to package A, package B elicited more positive emotion responses such as: “Interested”, “Good”, “Pleased”, “Calm”, “Eager” and “Polite.” Package A received more emotion responses like “Glad”, “Bored”, “Guilty”, “Merry” and “Daring” (Figure 3).

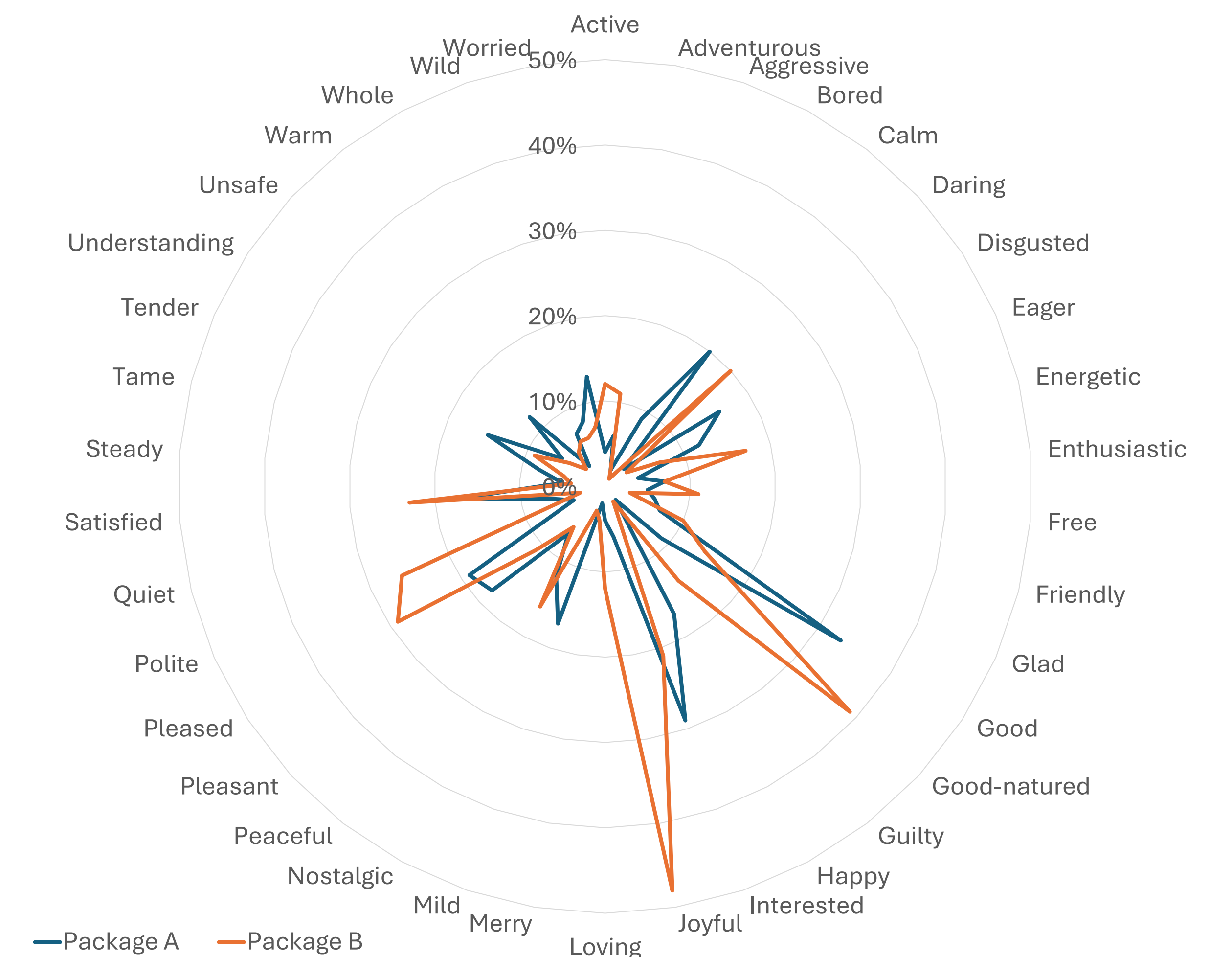


Figure 3. Consumer emotional response to photos of catfish with different packages zip top nylon bag (package A) and pre-labeled vacuum-packed bag (package B).

CONCLUSION

No consumer rejection was observed for any of the samples. These findings suggest that whole wild-caught catfish stored in ice for up to four days can yield fillets with comparable market potential to those processed immediately after harvest.

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